



Data Taking

2002 November 15-21

News from the Tevatron

- **Poor week for delivered luminosity**
 - Store 1968: 02:02 Fri Nov 15 Init L=21.76E30
 - Store 1971: 09:51 Sat Nov 16 Init L=29.79E30
 - End of store studies from 12:00 Sunday
 - Store 1981: 12:35 Wed Nov 20 Init L=26.70E30
 - "Store 1983" - quenched at low beta squeeze
 - 15:35 Thu Nov 21 - Recycler took remaining pbars
 - 2nd highest pbar load, but poor lifetimes
 - losses during ramp & squeeze



Other News

- AP-1 Vacuum problems began in the middle of Store 1971, preventing stacking
 - Rad Survey 21:00 Sat Nov 16th
 - Area was too hot - losses were too high to safely work
 - By 11:00 Sun Nov 17th, the losses were still too high to work for extended periods
 - Double whammy - turbo for pump was dead
 - Repair work began by mid-afternoon
 - By midnight, pump down was underway



Accesses

- Due to AP-1 vacuum problems, accelerator studies were moved up in the schedule
 - Again, there was no stack
- Planned 8-10 hour shutdown (driven by MiniBoone magnet repair)
 - Other work: Cryo, Main Injector, Recycler, etc.
 - DØ went into Supervised Access at 05:45 Tue Nov 20th which lasted until 22:15
 - Extended due to delay in finishing MP02 PS work
- Two DØ Controlled Accesses
 - No negative affect on Accelerator performance



DØ Performance

- Difficult to quantify this week
 - The luminosity reports have changed
 - I have no reference for downtime or efficiency
 - Michael has added stricter unitarity checks in his code which are unexpectedly eliminating luminosity from the Utilized and Live categories, instead of just the Recorded fraction (*see later slides*)
 - Michael will address this issue after he returns from NY, sometime after Dec 5th
 - For now, I can attempt to quantify downtime from the COOR logbook entries & work with Gordon to obtain daily/weekly deadtime summaries from daqAI
 - I do the former already as a check against the Lumi reports
 - The latter may be useful for system coordinators



ScriptRunner “bug”

- Logical flaw that occasionally caused farm nodes to incorrectly identify the proper triggers in the event headers (used by Luminosity, SAM, and Examines)
 - Hint of the problem for weeks but not conclusively found until a few days ago
 - Fix was made & has been online since Tuesday
 - Affects data taken from April 2002 → L2 was turned on
 - Small but non-trivial fraction, particularly in terms of normalization
 - Example: November data taking efficiency would drop from 72.6% to 61.7% (as of Wed Nov 20th) if “bad” data was discarded
 - That is a “loss” of 1.4 pb⁻¹ of data in just three weeks!



What will be done?

- There is sufficient information in the raw data to fix this problem
 - Using L1 trigger mask from the TFW, L2 trigger mask from L2 Global, we can determine if the L3 trigger bit should have been set
 - The “bad” triggers could then be removed
- All DSTs & p13.04 Thumbnails can be repaired, but none of the root-tuples
- To recover “lost” luminosity, it will be necessary to generate new “event catalogs”
 - Important to perform unitarity cross-checks
 - Expect to take a couple of months to spin through all the data
 - This option will allow us to repair SAM as well



Unitarity Checks

- If even one event failed then the entire block is declared bad. The basic unitarity criteria that are associated with data provided by L3/ScriptRunner (recorded information comes from the event catalog, accepts come from the TFW; all information is integrated over an LBN):
 - if l3Recorded > l2Recorded: BAD
 - if l3Recorded > l1Recorded: BAD
 - if l3Recorded > l2Accept: BAD
 - if l3Recorded > l1Accept: BAD
 - if l2Recorded > l1Recorded: BAD
 - if l2Recorded > l1Accept: BAD
 - if l2Recorded > l2Accept: BAD
 - if l1Recorded > l1Accept: BAD



Summary

- P13.04 will have the fixes for the ScriptRunner bug
 - Requires processing all the data...again
- Try to identify runs which were unaffected
 - Bug bit us when other runs were started or stopped during a global physics run (even configured)
 - Usually commissioning or calibration runs
 - SDAQ, CFT, L1 CTT, L2 STT, etc.
- All trigger efficiency studies that used data and a L2 trigger will need to be re-examined
- All data prior to Feb 9th 2002 is already “junk” because of two earlier ScriptRunner bugs
 - “junk” in the sense you will not be able to normalize your data with



Plans for Upcoming Week

- No change to trigger list: global_CMT-9.30
- No change to peak L1/L2/L3 rates ~ 600/250/50 Hz
 - Major Issue: Muon readout errors
 - More from Dmitri
- Priority: Continued Commissioning of Trigger
 - L1 CTT, L1 Muon, L1 CAL, L2 STT
- Stack 'N Store through Tue Owl Dec 3rd
- No scheduled Beam Studies next week
- As we expect beam throughout Thanksgiving holiday period (Eve Wed Nov 27 - Owl Mon Dec 2) - all systems need to make sure there are experts on-call 24/7
- Dmitri & I will both be around and taking some shifts